

of how the artifact was generated. They could account for the reliable generation of definite images (as well as the variability in appearance, which was a factor pointing to it being an artifact). In this case, the limited means of demonstrating the Golgi further helped their case since, once they had shown how the preferred means of establishing its existence could be generating an artifact, there was no countervailing independent evidence. Thus, they could effectively counter the primary evidence offered for the reality of the Golgi apparatus. They also could answer the claims suggesting a functional role for the Golgi apparatus, thereby undercutting the role of the theoretical account of cell operation in justifying the microscopical evidence.

Coming near the end of the long history of contention over the reality of the Golgi apparatus, Palade and Claude's study did little to alter opinions. Yet, it was a model for establishing that something is an artifact, and at least in their laboratory had the effect of prohibiting discussion of the Golgi apparatus over the next fifteen years.³⁸

5. EQUIPPED WITH NEW INSTRUMENTS AND TECHNIQUES TO ENTER TERRA INCOGNITA

According to the criteria set out earlier in this chapter, both cell fractionation and electron microscopy established themselves in the 1940s and 1950s as credible sources of evidence about component parts and operations within cells. Both provided patterns of results that were determinate and repeatable. Each secured consilience of the results it generated with those obtained in other ways and, especially, with each other. Finally, the results of each technique cohered well with emerging mechanistic models that accounted for a variety of cellular phenomena. The one major exception was when they delivered evidence on the Golgi apparatus, but this might be in part explicable as due to delays in finding a place for the Golgi apparatus in the mechanisms of the cell. In Chapter 6, I will show that once it was shown to comprise a mechanism that packaged proteins for secretion, doubts about its reality soon vanished.

³⁸ The second edition of *General Cytology* (de Robertis et al., 1954) was one of the few sources to mention Palade and Claude's work, doing so at the conclusion of a general summary of research on the Golgi apparatus in a section in fine print. Noting that Palade and Claude's work would suggest that the Golgi region was the locus of phospholipid droplets, they commented, "The confirmation of this concept would bring about the elimination of the name Golgi apparatus and perhaps its change into Golgi substance" (p. 148).